

PATENT SPECIFICATION

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(54) STACKABLE CONTAINERS

(71) We, IISI PRODUCTS AG, a Swiss Company, of Grabenstrasse 15, Chur, Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to stackable containers and has particular but not exclusive reference to containers for magnetic tape cassettes.

Containers comprising a substantially parallelepipedic housing adapted to the cassette contours and provided with transport means or with a carrier to convey a cassette from the housing through an opening at one narrow side of the housing are available on the market; such containers sold under the trade mark "system cbox" have dovetail keys and grooves at their large upper and lower face, respectively, permitting piling of several such containers. Reference may be had to British Patent 1,408,516. Cassette recordings are usually sold in packages provided with a label referring to the recorded program, the label sometimes being accompanied or replaced by a pamphlet or the like.

According to a first aspect, the present invention provides a stackable container having a respective mating part on each of two opposite faces thereof each to engage with a respective one of the mating parts of a like container, wherein one of the faces comprises a transparent area and support means are provided to support a label or similar item so that it can be viewed through the transparent area.

According to a second aspect, the present invention provides a container for a magnetic tape cassette comprising a substantially parallelepipedic housing adapted to the contour of the cassette and open at one of its narrow sides and comprising further a cassette carrier within said housing moveable, upon disengagement of locking means, out of said housing into a cassette-

removal outside position defined by stop means, said housing being provided on the one of its large walls with dovetail grooves and on its other large wall outside opposite thereto with dovetail keys complementary to said grooves permitting stacking of several such containers to form a stack, characterized in that at least one of said large walls is made of transparent material, that label support means are provided between said transparent wall and a housing space occupied by a cassette, and that a gap between said support means and said transparent wall provides space for insertion of a label.

A container as defined in the preceding paragraph can be provided with a label either manually by the user or automatically by a manufacturer, the label being visible from the outside of the container which, nevertheless, is adapted to be stacked by means of the dovetail system as described above either with containers of identical type or, selectively, with the known "cbox" containers.

The said support means can comprise an intermediate wall, lateral lands, a gridlike structure or other means suited to support a label. The gap is preferably accessible for insertion of a label via a slot, and adjacent said slot guide faces for automatic label insertion may be provided. The housing preferably consists of a main part including the label support and a transparent cover part, the latter being mounted on the main part by means of dovetail locking, snap action, welding or glueing. On its outer face, the transport wall is provided with dovetail grooves or keys, as the case may be, but preferably these are limited to the surface regions adjacent the edge of the wall.

The label may extend beyond the wall and be bent over the narrow open side of the housing and this bent label portion may be glued to a front face of the cassette carrier so that, for a package to be sold, the label forms a thiefproof seal.

By way of example only, certain

illustrative embodiments of the invention will now be described with reference to the accompanying drawings, in which:

figure 1 illustrates isometrically a container provided with a label, a transparent wall being partly mounted,

figure 2 is a similar illustration of a second embodiment wherein the transparent cover is to be welded to the housing,

figure 3 is an illustration of the assembled container of the second embodiment,

figure 4 shows how to open a fresh package,

figure 5 illustrates a third embodiment, the drawer serving as the cassette carrier being inside the housing,

figure 6 shows the same embodiment, the drawer being removed,

figure 7 is a section elevation according to line 7—7 of figure 6,

figure 8 is an isometric view of a fourth embodiment,

figure 9 is a section elevation according to line 9—9 of figure 8,

figure 10 is a isometric view of a fifth embodiment, and

figure 11 is a section elevation according to line 11—11 of fig. 10.

All drawings show containers according to the invention. The embodiments of figures 1—4 comprise a container basically of the type "cbox" referred to above, label space being provided by mounting a transparent cover thereon.

Referring to figure 1, a cassette container comprises a substantially parallelepipedic housing 10. At the bottom side of the housing, dovetail grooves 12, 14, 16 are provided and at the upper side opposite thereto, dovetail keys 13, 15 and 17 are integrally formed on the upper housing wall, the keys being complementary in shape and dimension with respect to the grooves. Slidably moveable in the housing 10, a drawer 18 is provided locked, in its pushed-in position, by a push button 20. Upon actuation of the push button, a spring (not shown) in the housing expands and pushes the drawer into an outer position, the movement stroke being limited by stop means (not shown). In this outer drawer position, the cassette may be inserted or removed. The container as described so far is like containers known under the designation "cbox".

The container is provided with a label placed over keys 13, 15, 17. The label comprises a main portion 22, a tear-off ribbon 24 (see Figure 2) and a secondary portion 26 connected to the main portion by means of the ribbon and bent down to lie flush with front face 28 of drawer 18; the bending is facilitated by means of perforations 30 of ribbon 24. Secondary label portion 26 has a previously applied coating of an adhesive

material on its surface facing the drawer and is glued by means therewith to the drawer front face during the packing operation. It is to be noted that ribbon 24 has a length equal to the width of the label main portion but that, in contrast, the secondary portion is shortened with respect thereto in order to leave button 20 accessible.

The construction of the label is the same for both the first and second embodiments and is shown in detail only for the latter. The difference between the first and second embodiments lies in the mounting of the transparent cover.

In the embodiment of figure 1 cover 32 made of transparent plastics material has two grooves 12' and 16', respectively, at its surface facing housing 10. These grooves, however, are merely vestigial, that is although lateral dovetail ridges 34 engage respectively under the undercuts of keys 13, 17, the surface area between the ridges 34, however, is smooth and plane, key 15 not being locked with cover 32. On the upper or outer side of cover 32, in contrast, keys 13', 15', 17' are provided identical to keys 13, 15 and 17 respectively, so that a second container may now be slipped by means of its proper grooves corresponding to grooves 12, 14, 16 unto keys 13', 15', 17' of cover 32.

This embodiment, owing to the interlocking engagement of housing and cover, does not need any additional fastening means. Because of the necessary sliding motion for assembly, it is less suited for mass production than an embodiment wherein a cover may be fitted by a simple downward movement. Figures 2—4 relate to such a design. Although cover 40, in this embodiment, also has dovetail keys 13', 15', 17' on its upper or outer side, it is provided, at its bottom side adjacent the housing, just with marginal ribs 42 to be fastened at the upper housing face by means of a suitable adhesive or by means of ultrasonic welding. The height of ribs 42 equals that of keys 13, 15, 17. Where the keys join the upper wall edge, the respective marginal rib has an incision.

A drawback of this design is that the cover cannot be removed again from the housing to save space, the user thus losing storage space when stacking a multiplicity of containers. For this reason, the ribs can alternatively be such that they can be snapped in engagement with the undercuts of dovetail keys 13 and 17, the transparent plastic material of the cover being sufficiently resilient for this purpose.

Figure 3 illustrates the package ready for sale. It will be noted that the drawer can be released upon actuation of button 20 only after the connection between label main portion 22 and secondary portion 26 has been broken by tearing off ribbon 24 (see figure 4). As long as the ribbon remains

intact it will serve as a package seal.

The third embodiment of the container shown in figures 5—7 comprises a housing 110 and a drawer 112 held in the housing, under bias of a spring, by means of a locking system (not shown) releasable upon actuation of button 114. On actuation of button 114 the drawer is pushed out of the housing into a position permitting cassette removal. It is to be noted that this design does not make use of the basic "cbox" container design.

The housing is transparent on its upper large side. A transparent plastic plate 116 has stacking keys 118 complementary to stacking grooves 119 of further like containers. The plate is welded to the housing which, for this purpose, has a seat defined by abutment shoulders 120. Disposed beneath said shoulders 120 and integrally formed with the housing body, a label support is defined by an intermediate plate 122. This intermediate plate preferably has holes or openings resulting in a gridlike structure which reduces the amount of plastics material.

As shown in figure 5, the plate 116 has an incision 123 above the front face of the drawer facilitating gripping of a label 124 placed under the plate. Even if several containers are stacked the label may still be gripped, in particular, if — as shown in figure 7 — edge 126' of intermediate plate 122 is somewhat offset with respect to the housing front edge and beneath incision 123 the intermediate plate 122 is provided with an additional incision 125.

The embodiment of figures 8 and 9 is distinguished from the previously described one in that the transparent plate 116' does not extend fully over the upper housing side to the front opening for drawer 112' but that the integral housing body 110' forms part of this outer face, intermediate plate 122' having a step 126' of inclined design to facilitate insertion of label 124'. Because of the resilience of the plastics material of which the parts are made, slot 128 is sufficiently narrow to prevent dropout of the label but yet can be resiliently widened for insertion or removal of the label.

Figure 9 shows a compression spring 130 and cassette 132 whose tape reels are held in the drawer by means of fingers 134. The cassette having a somewhat thinned portion remote from the drawer front end, the space above the thinner cassette portion is used to accommodate a label. Although this design may be less easily handled, it provides the advantage of having a reduced height compared with the previously described container.

The fifth embodiment shown in figures 10 and 11 comprises an integrally injection molded housing 139 and a transparent cover

wall 140. Front edge 142 of the wall is slightly offset to the rear with respect to front edge 141 of housing 139 resulting in a step or shoulder 144 suited to serve as a guide or stop for automatic insertion of label 146. The stack-connecting elements (keys 148) are provided in the marginal regions of the outside of transparent wall 140.

An intermediate plate 150 serves as a label support. It has a grip incision 152 and two large openings 154 for decreasing the quantity of material required to make it. Further, the intermediate plate is integrally formed with a pusher element 156 urging any thin label to the transparent wall but permitting insertion of a much thicker pamphlet or the like into the label-receiving gap between wall 140 and intermediate plate 150. Centrally, intermediate plate 150 does not have openings because this central portion serves as a shield between label 146 and compression spring 158.

Front plate 160 of the drawer 159 may close, other than shown in the drawings, the slot forming the label gap inlet.

Drawer stroke stop means are provided by downwardly protruding means 160 guiding in longitudinal slit 162 in the bottom housing wall.

The invention can also be applied to containers used to store other information records, for example optical records, which are to be identified by a label or the like, the fingers in the drawers blocking cassette tape reels then, of course, being omitted.

WHAT WE CLAIM IS:—

1. A stackable container having a respective mating part on each of two opposite faces thereof each to engage with a respective one of the mating parts of a like container, wherein one of the faces comprises a transparent area and support means are provided to support a label or similar item so that it can be viewed through the transparent area.

2. A container for a magnetic tape cassette comprising a substantially parallelepipedic housing adapted to the contour of the cassette and open at one of its narrow sides and comprising further a cassette carrier within said housing moveable, upon disengagement of locking means, out of said housing into a cassette-removal outside position defined by stop means, said housing being provided on the one of its large walls with dovetail grooves and on its other large wall outside opposite thereto with dovetail keys complementary to said grooves permitting stacking of several such containers to form a stack, characterized in that at least one of said large walls is made of transparent material, that label support means are provided between said transparent wall and a housing space occupied by a cassette,

and that a gap between said support means and said transparent wall provides space for insertion of a label.

5 3. A container set forth in claim 2, characterized in that said support means comprises an intermediate wall which in turn is provided with dovetail grooves or, respectively, a transparent cover being mounted thereupon.

10 4. A container set forth in claim 2, characterized in that said housing and said support means is integrally injected of plastics and that said transparent wall is welded or glued thereon.

15 5. A container set forth in claim 4, characterized in that spacing webs defining the height of said gap are integrally formed on said transparent wall.

20 6. A container set forth in claim 2 characterized in that said label comprises a portion bent over said open narrow side of said housing and glued to a front face of said carrier.

25 7. A container set forth in claim 6 characterized in that said label portion is connected to the remainder of the label housed within said gap by means of a tear-off ribbon.

30 8. A container set forth in claim 2 characterized in that said gap is provided with a label insert slot opening to the exterior.

9. A container set forth in claim 7 characterized in that said slot is provided parallel to said narrow open housing side.

35 10. A container set forth in claim 8 characterized in that said transparent wall extends over the major portion, but not the entire of said housing and that said slot is provided at an edge of said wall.

40 11. A container set forth in claim 8 characterized in that said support means comprises an intermediate wall extending beyond said slot to form a guide step for label insertion.

45 12. A container set forth in claim 8 characterized in that an intermediate wall forming said label support means and/or said transparent wall are provided adjacent said slot with an incision permitting gripping of said label.

13. A container set forth in claim 2 characterized in that said label support means is of gridlike structure.

14. A container set forth in claim 2 characterized in that said label support means comprises lands laterally disposed beneath said label. 55

15. A container set forth in claim 2 wherein said carrier is locked within said housing under bias of a compression spring, characterized in that portions at least of said label support means form a shield between said spring and said label receiving gap. 60

16. A container set forth in claim 2 characterized in that said label is urged against said transparent wall by at least one label thickness compensation element. 65

17. A container set forth in claim 2 characterized in that said transparent wall is provided with said dovetail grooves or keys, respectively, adjacent its circumference only. 70

18. A container substantially as herein described with reference to and as illustrated by Figure 1 of the accompanying drawings. 75

19. A container substantially as herein described with reference to and as illustrated by Figures 2 and 3 of the accompanying drawings. 80

20. A container substantially as herein described with reference to and as illustrated by Figures 5, 6 and 7 of the accompanying drawings.

21. A container substantially as herein described with reference to and as illustrated by Figures 8 and 9 of the accompanying drawings. 85

22. A container substantially as herein described with reference to and as illustrated by Figures 10 and 11 of the accompanying drawings. 90

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Fig.1

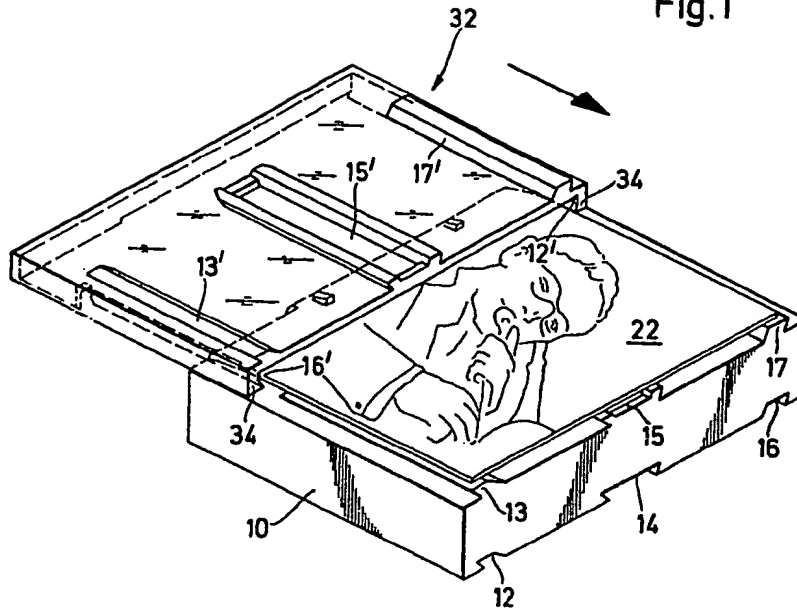


Fig.2

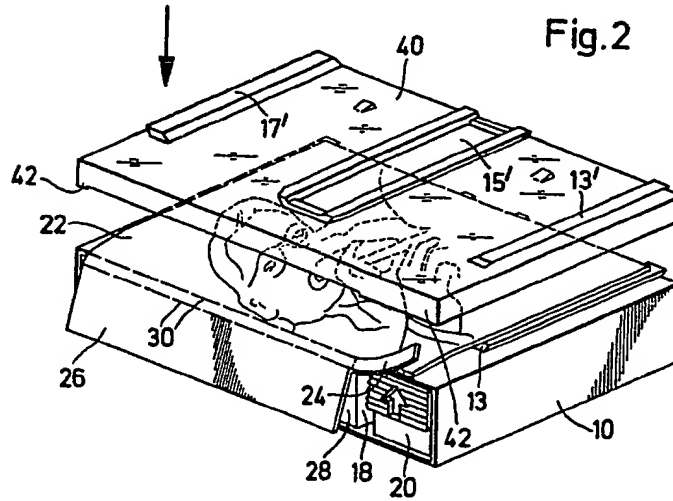


Fig.3

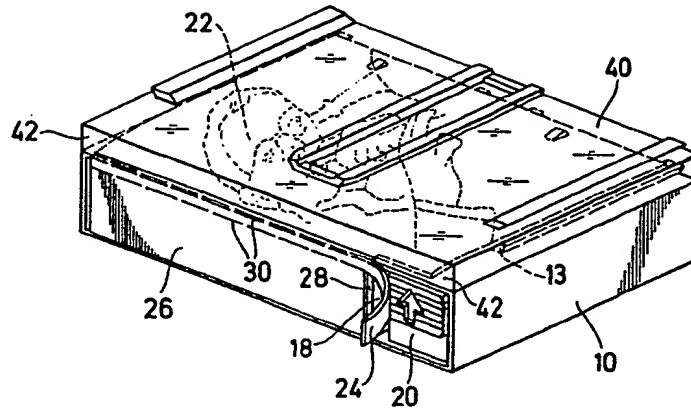


Fig.4

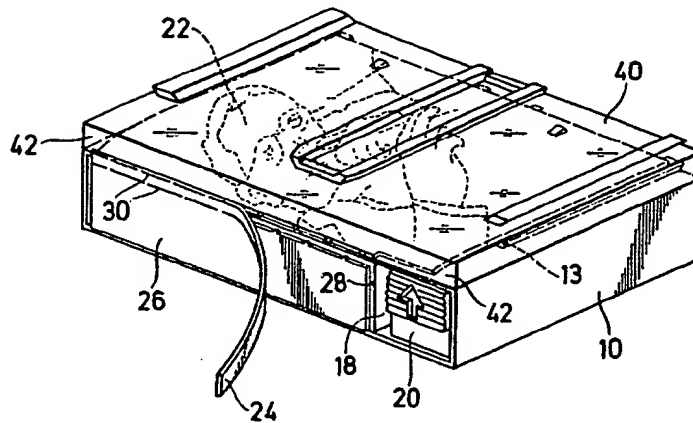


Fig. 5

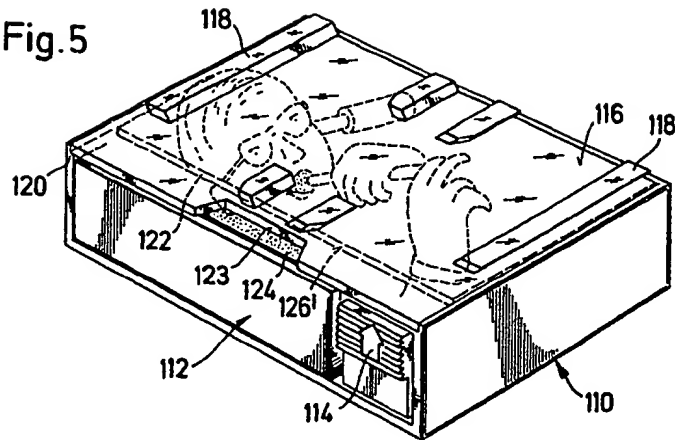


Fig. 6

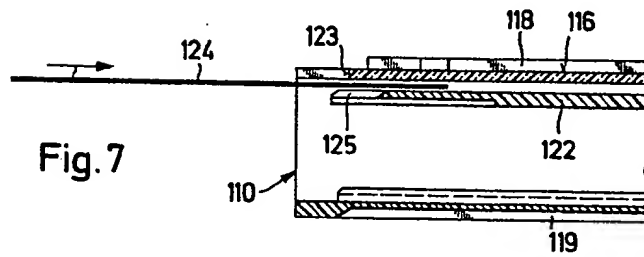
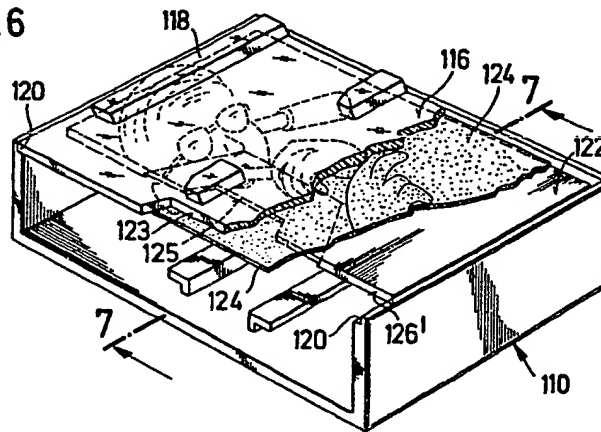


Fig. 8

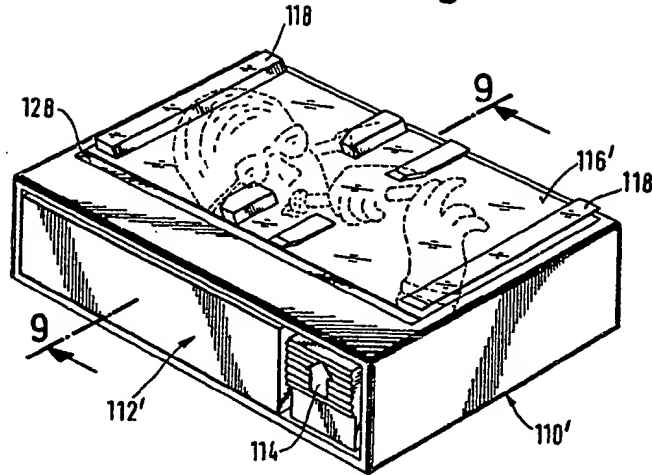


Fig. 9

